

Small Wind Projects and Township Zoning

Delaware County Regional Planning Commission

November 30, 2009 DRAFT

Introduction

The following report is a collection of information on alternative energy wind production facilities and their implication on township zoning. In 2008, the State of Ohio chose to treat Large Wind Projects over 5MW as public utilities, giving local jurisdictions the ability to regulate Small Wind Projects under 5MW that are connected to an electrical grid. Agriculture is generally exempted from regulation.

The enabling statute is rather thin, but a model has emerged from both Wood County as well as the Logan-Union-Champaign Regional Planning Commission. The two versions in this report are virtually identical to those models.

As with most township zoning issues, uses can be regulated, but not prohibited. Generally, Small Wind Projects are treated as a Conditional Use in residential areas and a Permitted Use in non-residential (commercial/industrial) areas. However, the same conditions apply regardless of whether they are in a residential or non-residential setting. This is consistent across the models. The difference, then, is just in the process; if permitted they would be handled by the Zoning Inspector and the BZA would handle conditional uses.

The two models within this report are only different in the placement of the regulation. The Kingston draft places new definitions in the Definitions section and all other regulations in the Application section, just after the agriculture and telecommunications sections. The Scioto draft places both definitions and regulations in the General Standards section, also adding text within each zoning district cross-referencing back to that section.

As development continues and technology improves, the details in this report are likely to change and are presented as general guidelines.

General Facts about Small Wind Projects and the Enabling Legislation (from various sources):

The State of Ohio gives local jurisdictions authority to regulate "Small" Wind Projects that generate less than 5 Megawatts of power (5 million watts). Projects that generate more than 5MW ("Large" Wind Projects) are assumed to be major utility companies that will be regulated through the Ohio Power Siting Board (OPSB) at the Public Utilities Commission of Ohio (PUCO) and are required to meet OPSB regulations.

A 1 kW (1 thousand watts) turbine can be purchased for \$5,000.

A 10 kW turbine will meet the needs of an average home in Ohio at the installation cost of \$50,000-\$70,000.

The actual turbine is only 15 to 20% of the total cost of the system. The tower, electrical/battery components and engineering make up the remainder.

A 10 kW turbine ranges from 60' to 120'. Anything taller is not feasible due to construction constraints and cost.

Who is likely to construct a small wind turbine? Schools, churches, municipal buildings, manufacturing/industrial facilities, homeowners.

An ideal site for Small Wind depends on topography and the location of other, taller structures nearby, including trees.

A residential turbine makes about as much noise as a washing machine.

Residential turbines are generally not suitable for small, suburban size lots/homes.

Recent turbines are being offered that can be placed on a chimney (these would likely be better regulated by the Building Department than through zoning).

There is no minimum recommended parcel size for installation, but it is advised that a “clear drop zone” be established so that if a tower falls, it wouldn’t fall on the primary residence, or onto neighboring properties. The “1.1” figure is used in the “Large Wind” regulations, and therefore has been placed into most “Small Wind” zoning resolutions.

Financing for these systems is starting to be offered by banks. If constructed along with a new home, the total cost can be combined into the mortgage.

Grants and tax exemptions/credits are available.

Some utility companies offer a 1.9 cent per kilowatt annual reimbursement.

Utility companies regulate the types of turbines that can be tied into their grids. Likely, they will also assure that standards have been met and manufacturer’s specifications have been followed before allowing a turbine to put power onto the grid.

Rather than attempt to regulate minor details of the engineering of a particular unit, an engineering report can be required and easily produced by the manufacturer. Grounding apparatuses, lightening protection, anti-clim devices, a dismantling plan, and maintenance plan can be part of that engineering plan.

Noise, flicker, and ice throw are often cited as major concerns, although there is little evidence to suggest these are major issues.

It is important to define Wind Projects separately from Accessory Structures to ensure that applicants do not confuse the two.

Tower color has been discussed as a possible area for regulation but was protested by the industry and has not been placed in other model codes.

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This is placed in the “Application of Resolution” chapter after Conformance Required, Agriculture, and Telecommunication Towers subsections. It essentially groups it with other exempted or partially exempted utilities.

Section 6.05 – Small Wind Project Farms less than 5 Megawatts.

Wind Projects Farms of 5MW or more shall be required to submit an application with the Ohio Power Siting Board (OPSB) at the Public Utilities Commission of Ohio (PUCO) and are required to meet OPSB regulations. Small Wind Projects Farms less than 5MW and used solely for Agriculture will be exempt from these zoning regulations as an Agricultural Use. Any proposed construction, erection, or siting of a small wind project farm less than 5MW including the wind turbine generator or anemometer or any parts thereof shall be a **Permitted Use in any zoning district except those expressly zoned for residential use. A conditional Use Permit shall be required in all districts zoned for residential use.** The areas zoned for residential use shall be deemed to be all land located within the following districts: Farm Residential (FR- I) and Planned Residential (PRD). **The following conditions shall be met for both Permitted and Conditional Use Permits:**

A.) General Requirements

- 1.) Height: The maximum height of any turbine shall be 125 ft. For purposes of this Resolution, maximum height shall be considered the total height of the turbine system including the tower, and the maximum vertical height of the turbine’s blades. Maximum height therefore shall be calculated by measuring the length of a prop at maximum vertical rotation to the base of the tower.

- 2.) Setbacks: Any turbine erected on a parcel of land shall be setback 1.1 times the height of the tower, or established "clear fall zone", from all road right-of-way lines and neighboring property lines. structures, as well as any inhabited structures on the parcel intended for the turbine. A turbine shall be erected and placed in such a manner that if it were to fall, whatever direction the fall occurs would be contained solely on the property where the turbine is located. and would not strike any structures including the primary dwelling, and any inhabited structures.
- 3.) Maintenance: Wind turbines must be maintained in good working order. The owner shall, within 30 days of permanently ceasing operation of a wind turbine tower, provide written notice of abandonment to the Zoning Inspector. An unused wind turbine or small wind project farm may stand no longer than 12 months following abandonment. All costs associated with the demolition of the wind turbine tower and associated equipment shall be borne by the property owner. A wind turbine tower is considered abandoned when it ceases transmission of electricity for 30 consecutive days. Wind turbines that become inoperable for more than 12 months must be removed by the owner within thirty (30) days of issuance of zoning violation. Removal includes removal of all apparatuses, supports, and or other hardware associated with the existing wind turbine.
- 4.) Decibel Levels: Decibel levels shall not exceed those provided by the manufacturer as requested in Section II Permits, C, 2, e. All units collectively shall operate at not more than 5 decibels above the established ambient decibel levels at property lines. This information shall be included in the engineering report described in Section II Permits. This information shall be obtained from the manufacturer of the turbine, and all decibel readings, if necessary, shall be taken from the nearest neighboring property lines. Those turbines not meeting this requirement will be issued a zoning violation and be required to shut down immediately until the required decibel levels are met.
- 5.) Wiring and electrical apparatuses: All wires and electrical apparatuses associated with the operation of a wind turbine unit shall be located underground or in an appropriate enclosed structure and meet all applicable local, state, and federal codes including the County Building Regulations and Residential Building Code of Ohio.
- 6.) Warning Signs: Appropriate warning signs to address voltage shall be posted.
- 7.) Building Permits: All Small Wind Projects Farms and parts thereof shall obtain all applicable Building Permits from the State of Ohio and County Building Regulations where required.

B.) Permits

- 1.) A permit shall be required before construction is commenced on an individual wind turbine project system.
- 2.) As part of the permit process, the applicant shall inquire with the County Building Regulations as to whether or not additional height restrictions are applicable due to the unit's location in relation to any local airports.
- 3.) Applicant shall then provide the Township Zoning Inspector with the following items and/or information when applying for a permit:
 - a.) Location of all public and private airports in relation to the location of the wind turbine.
 - b.) An engineering report that shows:
 - i.) The total size and height of the unit
 - ii.) If applicable, the total size and depth of the unit's foundation structure concrete mounting pad, as well as soil and bedrock data.

- iii.) A list and/or depiction of all safety measures that will be on the unit including anti-climb devices, grounding devices, and lightning protection, braking systems, guy wiring & anchors.
 - iv.) Data specifying the kilowatt size and generating capacity in kilowatts of the particular unit.
 - v.) The maximum decibel level of the particular unit. This information shall be obtained from the manufacturer of the turbine unit.
 - vi.) Ambient noise levels at property lines.
 - vii.) Hazardous materials containment and disposal plan.
- c.) A site drawing showing the location of the unit in relation to existing structures on the property, roads and other public right-of-ways, and neighboring property lines.
 - d.) Evidence of an established setbacks of 1.1 times the height of the wind turbine and “clear fall zone.” with manufacturer’s recommendation must be attached to the engineering report.
 - e.) A maintenance schedule as well as a dismantling plan that outlines how the unit will be dismantled.

Also the following Definitions were added in the Definitions section:

Accessory Structures: Structures such as sheds, storage sheds, pool houses, unattached garages, and barns.

Anemometer: An instrument that measures the force and direction of the wind.

Clear Fall Zone: An area surrounding the wind turbine unit into which the turbine and -or turbine components might fall due to inclement weather, poor maintenance, faulty construction methods, or any other condition causing turbine failure that shall remain unobstructed and confined within the property lines of the primary parcel where the turbine is located. The purpose of the zone being that if the turbine should fall or otherwise become damaged, the falling structure will be confined to the primary parcel.

Cowling: A streamlined removable cover that encloses the turbine’s nacelle.

Decibel: A unit of relative loudness equal to ten times the common logarithm of the ratio of two readings. For sound, the decibel scale runs from zero for the least perceptible sound to 130 for sound that causes pain.

Nacelle: Sits atop the tower and contains the essential mechanical components of the turbine to which the rotor is attached.

Megawatt (MW): A unit of power, equal to one million watts.

Small Wind Project: Any wind project less than 5MW which includes the wind turbine generator and anemometer.

Wind Power Turbine Owner. The person or persons who own(s) the Wind Turbine structure.

Wind Power Turbine Tower. The support structure to which the turbine and rotor are attached.

Wind Power Turbine Tower Height. The distance from the rotor blade at its highest point to the top surface of the ground at the Wind Power Generating Facility (WPGF) foundation.

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Placed in the General Development Standards section, then references within each non-residential district as a Permitted Use and within each residential district as a Conditional Use. However, the same set of standards are applied whether it is a Permitted or Conditional use, virtually identical to the Kingston version

Section 21.12 – Small Wind Project Farms less than 5 Megawatts.

As used in this section, “small wind farm” means wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of less than five megawatts.

Wind Projects Farms of 5MW or more shall be required to submit an application with the Ohio Power Siting Board (OPSB) at the Public Utilities Commission of Ohio (PUCO) and are required to meet OPSB regulations. Small Wind Projects Farms less than 5MW and used solely for Agriculture will be exempt from these zoning regulations as an Agricultural Use. Any proposed construction, erection, or siting of a small wind project farm less than 5MW including the wind turbine generator or anemometer or any parts thereof shall be a Permitted Use/Permit Required in any zoning district except those expressly zoned for residential use. A conditional Use Permit shall be required in all districts zoned for residential use. The areas zoned for residential use shall be deemed to be all land located within the following districts: Farm Residential (FR- I), Planned Residential (PRD) and Planned Residential Conservation District (PRCD).

A.) Definitions:

- 1.) **Accessory Structures:** Structures such as sheds, storage sheds, pool houses, unattached garages, and barns.
- 2.) **Anemometer:** An instrument that measures the force and direction of the wind.
- 3.) **Clear Fall Zone:** An area surrounding the wind turbine unit into which the turbine and -or turbine components might fall due to inclement weather, poor maintenance, faulty construction methods, or any other condition causing turbine failure that shall remain unobstructed and confined within the property lines of the primary parcel where the turbine is located. The purpose of the zone being that if the turbine should fall or otherwise become damaged, the falling structure will be confined to the primary parcel.
- 4.) **Cowling:** A streamlined removable cover that encloses the turbine’s nacelle.
- 5.) **Decibel:** A unit of relative loudness equal to ten times the common logarithm of the ratio of two readings. For sound, the decibel scale runs from zero for the least perceptible sound to 130 for sound that causes pain.
- 6.) **Nacelle:** Sits atop the tower and contains the essential mechanical components of the turbine to which the rotor is attached.
- 7.) **Primary Structure:** For each property, the structure that one or more persons occupy the majority of the time on that property for either business or personal reasons. Primary structures include structures such as residences, commercial buildings, hospitals, and day care facilities. Primary structures exclude structures such as hunting sheds, storage sheds, pool houses, unattached garages, and barns.
- 8.) **Professional Engineer.** A qualified individual who is licensed as a Professional Engineer in the State of Ohio.
- 9.) **Megawatt (MW):** A unit of power, equal to one million watts.
- 10.) **Small Wind Project:** Any wind project less than 5MW which includes the wind turbine generator and anemometer.
- 11.) **Wind Power Turbine Owner.** The person or persons who own(s) the Wind Turbine structure.
- 12.) **Wind Power Turbine Tower.** The support structure to which the turbine and rotor are attached.

- 13.) **Wind Power Turbine Tower Height.** The distance from the rotor blade at its highest point to the top surface of the ground at the Wind Power Generating Facility (WPGF) foundation.

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